

1. A retaining ring comprising:
  - a generally annular body having a top surface, a bottom surface, an inner diameter surface, and an outer diameter surface, wherein the outer diameter surface includes an outwardly projecting flange having a lower surface, and the bottom surface includes a plurality of channels.
- 5  
2. The retaining ring of claim 1, wherein the lower surface is substantially parallel to the top surface and the bottom surface.
- 10  
3. The retaining ring of claim 1, wherein the outer diameter surface includes a tapered section having a circumference that is greater toward the bottom surface than the top surface.
- 15  
4. The retaining ring of claim 3, wherein outer diameter surface includes a vertical section between the tapered section and the bottom surface.
5. The retaining ring of claim 3, wherein the tapered section forms an angle of about 60° relative to the bottom surface.
- 20  
6. The retaining ring of claim 1, wherein the inner diameter surface includes a tapered section having a circumference that is greater toward the top surface than the bottom surface.
- 25  
7. The retaining ring of claim 6, wherein inner diameter surface includes a vertical section between the tapered section and the bottom surface.
8. The retaining ring of claim 6, wherein the tapered section forms an angle of about 80° relative to the top surface.
- 30  
9. The retaining ring of claim 1, wherein the bottom surface include eighteen channels.

10. The retaining ring of claim 1, wherein the top surface includes a plurality of holes formed therein.

5

11. The retaining ring of claim 10, wherein the top surface includes eighteen holes.

12. The retaining ring of claim 1, further comprising at least one drain hole extending from the inner diameter surface to the outer diameter surface.

10

13. The retaining ring of claim 1, wherein the inner diameter surface has a radius of about 300 mm adjacent the bottom surface.

15

14. A retaining ring for a carrier head for use in chemical mechanical polishing having a mounting surface for a substrate, comprising:

a generally annular lower portion having a bottom surface for contacting a polishing pad, wherein the bottom surface includes a plurality of channels; and  
a generally annular upper portion secured to the lower portion, the upper portion having an outer diameter with an annular projection.

20

15. The retaining ring of claim 14, wherein the annual projection comprises a horizontal lower surface, a horizontal upper surface and a vertical cylindrical outer surface connecting the lower surface and the upper surface.

25

16. The retaining ring of claim 14, wherein the lower portion has an inner diameter surface with a radius of about 300 millimeters.

17. The retaining ring of claim 14, wherein the outer diameter surface includes a tapered section wherein a circumference of the tapered section is greater at toward the upper portion than the lower portion.

30

18. The retaining ring of claim 14, wherein the lower portion and the upper portion are formed as a single unit.
19. A retaining ring for a carrier head for use in chemical mechanical polishing having a mounting surface for a substrate, comprising:
  - 5 an inner diameter surface with a tapered surface, wherein a circumference of the inner diameter of the retaining ring is smaller toward a bottom surface than a top surface of the retaining ring.
- 10 The retaining ring of claim 19, wherein the inner diameter surface includes a cylindrical vertical surface.